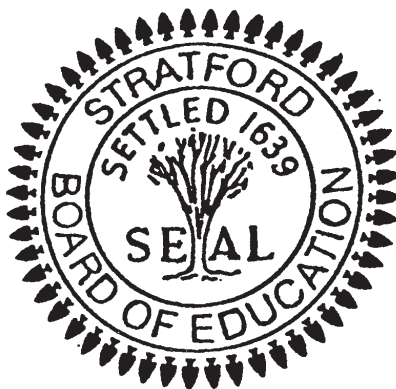


STRATFORD PUBLIC SCHOOLS

Stratford, Connecticut



“Tantum eruditi sunt liberi”
Only The Educated Are Free

Algebra 2 Curriculum

Adopted by the Board of Education on June 25, 2012

Irene Cornish
Superintendent

Elaine Watson
Assistant Superintendent

DISTRICT MISSION

The mission of the Stratford Public Schools is to develop a community of learners in which students acquire the knowledge, skills and confidence to meet the challenges of a changing and increasingly diverse 21st century society.

DISTRICT CORE VALUES

Students will acquire content knowledge, strengthen higher-order thinking, and develop character in order to address 21st century challenges.

BUNNELL HIGH SCHOOL BELIEFS

We believe teachers must work collaboratively in support of student learning and to model collaboration as a social skill with students. We believe that a rigorous curriculum for all students, an acceptance of diversity, and a culture that actively welcomes all learners will contribute to a more knowledgeable community and society. We believe in the value of a strong education as a means of preparing students for work and life in the remainder of the 21st century.

STRATFORD HIGH SCHOOL BELIEFS

- a safe, positive school climate that embraces diversity is essential to ensure respect and opportunity for each individual
- students should understand the world beyond their community in order to contribute to a global society
- parents and students must share responsibility and work in partnership with the school in order to improve academic performance and to develop lifelong learners
- students should use technology effectively to acquire, process, and deliver information

BUNNELL HIGH SCHOOL and STRATFORD HIGH SCHOOL

LEARNING EXPECTATIONS

All students will...

- use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. (Academic)
- work independently and collaboratively to solve problems and accomplish goals. (Civic-Social)
- communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. (Academic)
- demonstrate innovation, flexibility and adaptability in thinking patterns, work habits and working/learning conditions. (Academic)
- effectively apply the analysis, synthesis and evaluation processes that enable productive problem solving. (Academic)
- value and demonstrate personal responsibility, character, cultural understanding and ethical behavior. (Civic-Social)
- show competence in all core academic subjects and other fields of interest, including the ability to clearly and effectively communicate content information in multiple formats. (Academic)

ALGEBRA 2 UNIT PLANS #1 – 8

Stratford Public Schools

Algebra 2 Unit #1

Unit Name: Unit #1	Est. # of Weeks: 5 weeks (25 days)
Synopsis: Chapter 1 Tools of Algebra	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards</p> <p>1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.</p> <p>1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.</p> <p>2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.</p> <p>2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <p>Absolute value Absolute value of a real number Additive inverse Algebraic expression Coefficient Compound inequality Evaluate Experimental probability Extraneous solution Multiplicative inverse Opposite Reciprocal Sample space Simulation Solution of the equation Term Theoretical probability Tolerance Variable Variable expression</p>
<p><u>21st Century Skills and Expectations</u> <u>Rubric: Critical Skills</u></p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior</p>	

<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will understand basic concepts and properties of real numbers. • Students will solve and graph one-variable equations and inequalities including absolute value. • Students will know the fundamental concepts of experimental, theoretical and geometric probability. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How are basic concepts and properties of real numbers used to solve equations and inequalities? • How does one apply experimental, theoretical and geometric probabilities to real-world situations?
<p>Learning Objectives / Grade Level Expectations</p> <p><i>Students will:</i></p> <ul style="list-style-type: none"> • graph, order, identify and use properties of real numbers. • evaluate and simplify algebraic expressions. • write and solve equations and inequalities. • solve absolute value equations and inequalities. • find experimental and theoretical probabilities. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> • PBA # 1 Buy the Hour Critical Skills Rubric #5 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 1a & Post 1b • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • Quizzes
<p>LEARNING PLAN COMPONENTS</p>	
<ul style="list-style-type: none"> • Prentice Hall Mathematics – Algebra 2 Chapter 1 • Supplemental resources • Differentiation of Special Needs students 	

Stratford Public Schools
Algebra 2 Unit #2

Unit Name: Unit #2

Est. # of Weeks: 5 weeks (24 days)

Synopsis: Chapter 2 Functions, Equations, and Graphs
Section 12-3 Analyzing Data

STUDENT LEARNING GOALS

Content-Specific Powered Standards

1.1 Understand and describe patterns and functional relationships.
a. Describe relationships and make generalizations about patterns and functions.

1.2 Represent and analyze quantitative relationships in a variety of ways.
a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.

1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.
Solve problems using a variety of algebraic methods.

4.1 Collect, organize and display data using appropriate statistical and graphical methods.
a. Create the appropriate visual or graphical representation of real data.

4.2 Analyze data sets to form hypotheses and make predictions.
a. Analyze real-world problems using statistical techniques.

4.3 Understand and apply basic concepts of probability.
a. Understand and apply the principles of probability in a variety of situations.

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies
Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use
Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application
Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation
Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management
Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

Key Vocabulary

Measures of central tendency	Mean	Median
Mode	Bimodal	Quartiles
Box-and-whisker plot	Percentiles	Outlier
Absolute value function	Constant of variation	Dependent variable
Direct variation	Domain	Function
Function notation	Independent variable	Linear equation
Linear function	Linear inequality	Mapping diagram
Parent function	Point-slope form	Range
Relation	Scatter plot	Slope
Slope-intercept form	Standard form	Translation
Trend line	Vertex	Vertical-line test
x-intercept	y-intercept	

21st Century Skills and Expectations
Rubric: Critical Skills

1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.
2. Work independently and collaboratively to solve problems and accomplish goals.
3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.
5. Effectively apply the analysis, synthesis, and evaluative processes that

<p>enable productive problem solving. 6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior</p>	
<p>Enduring Understandings</p> <p>Students will know the basic concepts and properties of relations and functions. Students will graph and write equations of linear functions, slope, direct variation and absolute value functions. Students will understand the linear equations are useful in modeling many real-world problems. Students will analyze vertical and horizontal translations of parent functions. Students will graph two-variable linear and absolute value inequalities. Students will analyze and graph data.</p>	<p>Essential Questions</p> <p>What are the basic concepts and properties of relations and functions? How does one graph and write the equations of lines? How does one write and interpret direct variation equations? How is real-world data used to write a linear equation and make a prediction? How is an absolute value function graphed and translated? How are two-variable linear and absolute value inequalities graphed? How does one analyze and graph data?</p>
<p>Learning Objectives / Grade Level Expectations</p> <p><i>Students will:</i> identify a relation versus a function. graph and write a linear function and find the slope and intercepts. write and interpret direct variation equations. write and predict from linear models using real-world data. write and graph an absolute value function and various translations. graph two-variable linear and absolute value inequalities. use measures of central tendencies. draw and interpret box-and-whisker plots.</p>	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> PBA # 2 Systems of Equations Critical Skills Rubric #5 	<p>Formative and Diagnostic Assessment(s)</p> <p>CFA Pre 2a & Post 2b Informal assessments of class work Weekly quiz Homework review Chapter assessment Quizzes</p>
<p>LEARNING PLAN COMPONENTS</p>	
<p>Prentice Hall Mathematics –Algebra 2 Chapter 2, Chapter 12-3 Supplemental resources Differentiation of Special Needs students</p>	

Stratford Public Schools
Algebra 2 Unit #3

Unit Name: Unit # 3	Est. # of Weeks: 3.5 weeks (18 days)
Synopsis: Chapter 3 Linear Systems	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards Students should...</p> <p>1.1 Understand and describe patterns and functional relationships.</p> <p>a. Describe relationships and make generalizations about patterns and functions.</p> <p>1.2 Represent and analyze quantitative relationships in a variety of ways.</p> <p>a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.</p> <p>1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.</p> <p>a. Solve problems using a variety of algebraic methods.</p> <p>2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Develop strategies for computation and estimation using properties of number systems to solve problems.</p> <p>b. Solve proportional reasoning problems.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <p>-----</p> <p>Key Vocabulary</p> <p>Constraints System of equations Linear system Independent System Dependent System Inconsistent System Equivalent Systems Linear Programming Objective Function Feasible Region</p>
<p><u>21st Century Skills and Expectations</u></p> <p><u>Rubric: Critical Skills</u></p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	

<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will graph systems of linear equations. • Students will solve systems by substitution and elimination. • Students will solve systems of inequalities. • Students will solve problems with linear programming (Honors). 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How are real-world problems solved by systems of linear equations or inequalities? • How is graphing used to find the solution of a system of linear equations? • How are algebraic methods used to find the solutions to systems of linear equations? • How is linear programming used to find the maximum or minimum of a function? (Honors)
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<p>Learning Objectives / Grade Level Expectations</p> <p><i>Students will:</i></p> <ul style="list-style-type: none"> • solve a system by graphing. • solve a system by substitution. • solve a system by elimination. • solve a system of linear inequalities. • find maximum and minimum values. • solve problems with linear programming (Honors).
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ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> • PBA # 3 Hot! Hot! Hot! Critical Skills Rubric #3, #4 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 3a & Post 3b • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • Quizzes
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LEARNING PLAN COMPONENTS

<ul style="list-style-type: none"> • Prentice Hall Mathematics – Algebra 2 Chapter 3 • Supplemental resources • Differentiation of Special Needs Students
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Stratford Public Schools
Algebra 2 Unit # 4

Unit Name: Unit # 4	Est. # of Weeks: 5 weeks (24 days)
Synopsis: Chapter 5 Quadratic Equations and Functions	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards</p> <p>Students should...</p> <p>1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.</p> <p>1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.</p> <p>1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. b. Solve problems using a variety of algebraic methods. c.</p> <p>2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.</p> <p>2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.</p> <p>3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Verify geometric relationships using algebra, coordinate geometry and transformations.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • Quadratic function • Standard form of a quadratic function • Parabola • Axis of symmetry • Vertex of parabola • Absolute value of a complex number • Completing the square • Complex number • Difference of two squares • Discriminant • Factoring • Greatest common factor • i • Imaginary number • Quadratic formula • Standard form of a quadratic equation • Standard form of a quadratic function • Vertex form of a quadratic function • Zero of a function • Zero product property
<p><u>21st Century Skills and Expectations</u> Rubric: Critical Skills</p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and</p>	

<p>collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will know the basic concepts and properties of the quadratic function. • Students will know properties and translations of a parabola. • Students will understand that quadratic functions are useful in modeling real-world data. • Students will know how to factor quadratic expressions and solve quadratic equations by completing the square and the quadratic formula. • Students will know the complex number system and arithmetic operations using complex numbers. • Students will use the discriminant to determine types of solutions of quadratic equations. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • What are the basic concepts and properties of a quadratic function? • How does one graph quadratic functions and find maximum and minimum values? • How does one translate a quadratic function by using the vertex form? • How is a quadratic function used to model real-world data? • What are the various ways to factor a quadratic expression? • What are the various ways to solve a quadratic equation? • What are the properties of a complex number and how are arithmetic operations performed using complex numbers? • How is the discriminant evaluated and used to determine types of solutions of quadratic equations?
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • identify quadratic functions and graphs. • model data with quadratic functions. • graph a quadratic function by using various forms. • find the maximum and minimum values of quadratic functions. • find common and binomial factors of quadratic expressions along with special cases of factoring (difference of two squares, perfect square trinomials). • solve a quadratic equation by factoring and finding square roots. • solve a quadratic equation by graphing, completing the square and the quadratic formula. • identify, graph, add, subtract, and multiply complex numbers. • use the discriminant to determine types of solutions of quadratic equations. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 4a & Post 4b • Informal assessments of class work • Weekly quiz • Home work review • Chapter assessment • Quizzes
<p>LEARNING PLAN COMPONENTS</p>	
<ul style="list-style-type: none"> • Prentice Hall Mathematics – Algebra 5 • Supplemental resources • Differentiation of Special Needs students 	

Stratford Public Schools
Algebra 2 Unit #5

Unit Name: Unit # 5

Est. # of Weeks: 4 weeks (21 days)

Synopsis: Chapter 6 Polynomials and Polynomial Functions

STUDENT LEARNING GOALS

Content-Specific Powered Standards

1.1 Understand and describe patterns and functional relationships.

a. Describe relationships and make generalizations about patterns and functions.

1.2 Represent and analyze quantitative relationships in a variety of ways.

a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.

2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Develop strategies for computation and estimation using properties of number systems to solve problems.
b. Solve proportional reasoning problems.

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies

Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

21st Century Skills and Expectations

Rubric: Critical Skills

1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.

2. Work independently and collaboratively to solve problems and accomplish goals.

3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.

4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.

5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.

6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Key Vocabulary

Axis of symmetry
completing the square
complex numbers
complex number plane
difference of two squares
discriminant
factoring
imaginary numbers
parabola
perfect square trinomial
quadratic formula
quadratic function
standard formula of a quadratic function
vertex form of a quadratic function
zero of a function
zero product property

Enduring Understandings

- Students will simplify expressions with integer exponents.
- Students will have an understanding of polynomial functions.
- Students will know how to factor polynomials
- Students will divide polynomials and solve polynomial equations.

Essential Questions

- How are the properties of exponents used to simplify monomial expressions?
- How do exponents affect the graphs of polynomial functions?
- How does one find linear factors, roots, and zeroes of functions?
- How does one use long division and synthetic division to find the roots of functions?

Learning Objectives / Grade Level Expectations

Students will:

- **simplify** expressions with integer exponents.
- **classify** polynomials.
- **model** data using polynomial functions.
- **analyze** the factored form of a polynomial.
- **write** a polynomial function from its zeroes.
- **divide** polynomials using long division and synthetic division
- **solve** polynomial equations by graphing and factoring

ASSESSMENT PLAN**Summative Assessment(s) / Performance Based Assessments including 21st Century Learning****Formative and Diagnostic Assessment(s)**

- Informal assessments of class work
- Weekly quiz
- Homework review
- Chapter assessment
- Quizzes

LEARNING PLAN COMPONENTS

- Prentice Hall Mathematics – Algebra 2 Chapter 6
- Supplemental resources
- Differentiation of Special Needs students

Stratford Public Schools
Algebra 2 Unit #6

Unit Name: Unit # 6

Est. # of Weeks: 4.5 weeks (22 days)

Synopsis: Chapter 7 Radical Functions and Rational Exponents

STUDENT LEARNING GOALS

Content-Specific Powered Standards Students should...

1.1 Understand and describe patterns and functional relationships.

a. Describe relationships and make generalizations about patterns and functions.

1.2 Represent and analyze quantitative relationships in a variety of ways.

a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.

1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.

d. Solve problems using a variety of algebraic methods.

2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships.

a. Extend the understanding of number to include integers, rational numbers and real numbers.
b. Interpret and represent large sets of numbers with the aid of technologies.

2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Develop strategies for computation and estimation using properties of number systems to solve problems.
b. Solve proportional reasoning problems.

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies

Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

Key Vocabulary

Radicand
Index
Principal Root
Rationalize the denominator
Like Radicals
Rational Exponent
Radical Equation
Composite Function

21st Century Skills and Expectations

Rubric: Critical Skills

1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.

2. Work independently and collaboratively to solve problems and accomplish goals.

3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.

4. Demonstrate innovation, flexibility, and adaptability in thinking patterns,

<p>work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>		
<p>Enduring Understandings</p> <ul style="list-style-type: none"> ● Students will simplify nth roots and radical expressions. ● Students will multiply, divide, add, and subtract radical expressions. ● Students will multiply and divide binomial radical expressions. ● Students will simplify expressions with rational exponents. ● Students will solve radical equations. ● Students will understand function notation and operations with functions. 	<p>Essential Questions</p> <ul style="list-style-type: none"> ● How are roots simplified? ● How does one simplify radical expression using basic operations? ● How does multiply and divide binomial radical expressions? ● How does one simplify expressions with rational exponents? ● How does one solve radical equations? ● How does one use the basic operations on functions? 	
<p>Learning Objectives / Grade Level Expectations</p> <p><i>Students will:</i></p> <ul style="list-style-type: none"> ● simplify nth roots. ● add, subtract, multiply and divide radical expressions. ● multiply and divide binomial radical expressions. ● simplify expressions with rational exponents. ● solve radical equations. ● add, subtract, multiply, and divide functions. ● find the composite of two functions. 		
<p>ASSESSMENT PLAN</p>		
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> ● PBA #4 Project Drive Critical Skills Rubric #1 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> ● Informal assessments of class work ● Weekly Quiz ● Homework Review ● Chapter Assessment 	
<p>LEARNING PLAN COMPONENTS</p>		
<ul style="list-style-type: none"> ● Prentice Hall Mathematics – Algebra 2 Chapter 7 ● Supplemental resources ● Differentiation of Special Needs students 		

Stratford Public Schools
Algebra 2 Unit #7

Unit Name: Unit # 7	Est. # of Weeks: 4 weeks (20 days)
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Synopsis: Chapter 9 Rational Functions

STUDENT LEARNING GOALS

<p>Content-Specific Powered Standards</p> <p>1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.</p> <p>2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.</p> <p>2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.</p> <p>4.3 Understand and apply basic concepts of probability. a. Understand and apply the principles of probability in a variety of situations.</p> <hr/> <p>21st Century Skills and Expectations Rubric: Critical Skills</p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem</p>	<p>Interdisciplinary Standards</p> <ul style="list-style-type: none"> ➤ NOTE: Any standard included here must be assessed in the assessment plan. ➤ Include, as appropriate: <ul style="list-style-type: none"> ○ Technology ○ Information Literacy ○ Reading, Writing, Speaking ○ Other Interdisciplinary Areas ➤ Include cross reference number to CT state frameworks. <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <p>Branch Combined variation Complex fraction Dependent events Independent events Inverse variation Mutually exclusive events Point of discontinuity Rational function Simplest form</p>
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solving. 6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior.		
Enduring Understandings <ul style="list-style-type: none"> • Students will graph rational functions, including vertical and horizontal asymptotes. • Students will simplify rational expressions. • Students will add, subtract, multiply, and dividing rational expressions. • Students will solve rational equations. • Students will understand the probability of multiple events. 	Essential Questions <ul style="list-style-type: none"> • How are basic concepts and properties of real numbers used to solve equations and inequalities? • How does one apply experimental, theoretical and geometric probabilities to real-world situations? • How does one analyze and graph data? 	
Learning Objectives / Grade Level Expectations <i>Students will:</i> <ul style="list-style-type: none"> • graph, order, identify and use properties of real numbers. • evaluate and simplify algebraic expressions. • write and solve equations and inequalities. • solve absolute value equations and inequalities. • find experimental and theoretical probabilities. • use measures of central tendencies. • draw and interpret box-and-whisker plots. 		
ASSESSMENT PLAN		
Summative Assessment(s)/Performance Based Assessments including 21st Century Learning Critical Skills Rubric #1- 6	Formative and Diagnostic Assessment(s) <ul style="list-style-type: none"> • Informal assessments of class work • Weekly Quiz • Homework Review • Chapter Assessment 	
LEARNING PLAN COMPONENTS		
<ul style="list-style-type: none"> • Prentice Hall Mathematics – Algebra 2 Chapter 9 • Supplemental resources • Differentiation of Special Needs students 		

Stratford Public Schools
Algebra 2 Unit #8

Unit Name: Unit # 8	Est. # of Weeks: 3.5 weeks (18 days)
Synopsis: Chapter 4 Matrices	

STUDENT LEARNING GOALS	
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<p>Content-Specific Powered Standards</p> <p>Students should...</p> <p>1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.</p> <p>1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.</p> <p>1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. e. Solve problems using a variety of algebraic methods.</p> <p>2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <p>Augmented Matrix Determinant Dilation Equal Matrices Image Matrix Matrix addition Matrix element Matrix equation Matrix multiplication Preimage Row operations Scalar Product Transformation Variable matrix Zero matrix</p>
<p><u>21st Century Skills and Expectations</u></p> <p><u>Rubric: Critical Skills</u></p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p>	

6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.	
Enduring Understandings	Essential Questions
<ul style="list-style-type: none"> • Students will organize data into matrices and determinants. • Students will describe, classify, and solve systems of linear equations using matrices and determinants. • Students will add, subtract, and multiply matrices 	<ul style="list-style-type: none"> • How is data organized into matrices? • How does one add, subtract, and multiply matrices? • How are matrix equations solved? • How are determinants of matrices evaluated? • How are inverse matrices used in solving equations? • How can one solve a system of linear equations using inverse matrices? • How can one solve a system of equations using Cramer's Rule?
Learning Objectives / Grade Level Expectations	
<p><i>Students will:</i></p> <ul style="list-style-type: none"> • identify matrices and their elements • organize data into matrices • add and subtract matrices • solve matrix equations • multiply a matrix by a scalar • multiply two matrices • evaluate determinants of 2x2 matrices and find inverse matrices • use inverse matrices in solving matrix equations • solve systems of equations using inverse matrices • solve a system of equations using Cramer's Rule 	
ASSESSMENT PLAN	
Summative Assessment(s)/Performance Based Assessments including 21st Century Learning	Formative and Diagnostic Assessment(s)
Critical Skills Rubric #1- 6	<ul style="list-style-type: none"> • Informal assessments of class work • Weekly Quiz • Homework Review • Chapter Assessment • Final Exam
LEARNING PLAN COMPONENTS	
<ul style="list-style-type: none"> • Prentice Hall Mathematics – Algebra 2 Chapter 4 • Supplemental resources • Differentiation of Special Needs students 	